

OAKLAND AVENUE VIADUCT
(Bridge No. 2302)

HAER No. PA-388

Oakland Avenue spanning U.S. Route 62 (SR Route 2302)
and Pine Run
Sharon
Mercer County
Pennsylvania

HAER
PA
43-SHAR,
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD

National Park Service
Northeast Region
Philadelphia Support Office
U.S. Custom House
200 Chestnut Street
Philadelphia, P.A. 19106

HAER
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HISTORIC AMERICAN ENGINEERING RECORD

OAKLAND AVENUE VIADUCT (Bridge No. 2302)
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Location: Oakland Avenue spanning
U.S. Route 62 (S.R. 2302) and Pine Run
Sharon, Mercer County, Pennsylvania

UTM: 18.542860.4564330

Date of Construction: 1936

Engineer: Frank P. Graham

Builder/Contractor: Freeland, Inc.

Present Owner: Mercer County Commissioners
503 Mercer County Courthouse
Mercer, PA 16137

Present Use: Vehicular and Pedestrian bridge

Significance: The Oakland Avenue Bridge (Bridge No. 2302) is an excellent example of a dual-rib, open-spandrel concrete arch bridge executed in the Stripped Classicism style. The bridge is also an excellent example of design utilizing the plasticity of reinforced concrete as achieved by American engineers in the period 1910-1940. The location of the bridge served as an important crossing locus in the center of the City of Sharon linking two neighborhoods which date to the period 1870-1940. In addition Oakland Avenue is a major residential, commercial, and service thoroughfare.

Project Information: An evaluation by the PA Department of Transportation advised replacement of the structure. The bridge was determined to be eligible for inclusion on the National Register of Historic Places under Criterion C. Documentation was stipulated to mitigate the adverse effect of the replacement of the bridge.

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Summary Description of the Oakland Avenue Bridge

The Oakland Avenue Bridge in the City of Sharon carries Oakland Avenue across the 60-100 foot-deep ravine containing U.S. Route 62 (S.R. 0062) and Pine Run.

The existing Oakland Avenue Bridge is a 300 foot-long structure built of reinforced concrete and executed in the Stripped Classicism Style. An aluminum plaque attached to the northern end of the western balustrade indicates that the bridge was designed by Frank P. Graham, Engineer and was constructed in 1936 by the contracting firm of Freeland Inc.¹ The main arch of the Bridge is 185 feet long and rises 62 feet above U.S. Route 62. The dual-rib, open-spandrel arch exhibits thin, rectangular spandrel columns with small, rectangular, plain capitals and bases. The main arch piers are detailed with molded, incised pilasters. Plain, regularly segmented portions mark the balustrade.² The Bridge is an excellent example of design utilizing the plasticity of reinforced concrete as achieved by American engineers in the period 1910-1940.

The existing Oakland Avenue Bridge was constructed in 1936 over Pine Run and a railroad spur. The railroad, originally the Sharon and Greenfield Railroad, had been constructed primarily to haul coal from mines southeast of Sharon to the canal basin in Sharon. It was removed prior to the construction of U.S. Route 62 (then Pennsylvania Legislative Route 74 Parallel). A previous Oakland Avenue Bridge was constructed in the period 1901 to 1908, and was a Warren deck-truss bridge set on steel bents. It was removed prior to construction of the existing Bridge in 1936.

The concrete of the existing Bridge is deteriorating.³ Steel netting has been wrapped around the ribs of the arch to prevent falling concrete from striking passing automobiles below. In addition, the bridge has been repaired seven times in the period 1958-1986. Some of the details of the design of the bridge have been obscured by the spalling and preventive netting.

¹The plaque reads "Federal Emergency Administration of Public Works PA-116BR, Mercer County, Pennsylvania, Oakland Avenue Bridge, 1936, County Commissioners D.K. Callahan, Robert Jamieson, George W. Boyd, Engineer - Frank P. Graham, Solicitor - Benj. H. Marks, Contractor - Freeland, Inc."

²The decoration on the balustrade is in contrast to that specified in the original drawings.

³According to a 1986 analysis, the state of concrete technology in 1936 resulted in structures that would eventually deteriorate due to frost action. As a result, the concrete of the bridge continues to deteriorate despite frequent repairs.

Historical Background of the Oakland Avenue Bridge (Bridge No. 2302)

The existing Oakland Avenue Bridge carries Oakland Avenue across the 60-100 foot-deep ravine containing U.S. Route 62 (S.R. 0062) and Pine Run⁴ in the City of Sharon, Mercer County, Pennsylvania.

The first settlement of what is now Sharon occurred in 1795, when Benjamin Bentley arrived from Washington County, Pennsylvania. William Budd, from Westmoreland County, Pennsylvania, came the following year. Many settlers moved into the area in 1797 and in 1800, Mercer County was formed from Allegheny County.

Bentley and Budd provided the early developments that would become Sharon. In 1802, Bentley constructed a dam across the Shenango River utilizing the water power for a gristmill and a sawmill, constructed the same year. Budd laid out the original plat of Sharon in 1815, which is the present-day downtown section of the town, on the floodplain of the Shenango River.

Sharon developed slowly. Roads were the only transportation routes available. The road from Sharon to Mercer, roughly following U.S. Route 62 (Business Route 62, east State Street in Sharon), was cut in 1815 (White 1909:63). In the early decades to the nineteenth century, Sharon was a local market center for the surrounding area. Additional mills, including a fulling and carding mill, were built along the Shenango River and its tributaries. Hickory Township, where Sharon is located, was formed in 1822-1823 (Durant 1877:14).

The Erie and Pittsburgh Canal reached Sharon in 1840. The improved transportation had an immediate impact. Coal had been discovered east of Sharon in 1835.⁵ Mining began in 1839, and the first coal was shipped on the canal to New Castle the following year. At first, coal was hauled to the canal by wagon. However, in the period 1845-1859, the narrow-gauge Sharon and Greenfield Railroad

⁴Pine Run flows into the Shenango River. The Shenango River joins with the Mahoning River at New Castle to form the Beaver River, which empties into the Ohio River at the town of Beaver.

⁵Mercer County coal, termed "block coal," (Durant 1877:125) did not burn as hot as Pittsburgh coal. It was not the jet black color of the Pittsburgh coal, but a dark brown color. However, blast furnace managers in Sharon discovered they could use it uncoked in the furnaces, as they had charcoal (White 1909:352). The coal had been less metamorphosed than the Pittsburgh coal, and as a result, had less of a concentration of sulphur, which made pig iron more brittle. However, by 1880, coke was used in the blast furnaces of Sharon, indicating that while the amount of sulphur was low, it still affected the quality of the iron produced. When a better understanding of the iron-making process had been achieved by 1880, high-quality iron and steel could be produced consistently. Coking permitted furnace managers more control over the amount of sulphur in the fuel. By 1880, the Mercer County coal was being coked before its use in the furnaces.

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was constructed from the coal outcrops east of Sharon to the canal basin. The railroad ran to the canal basin through the 60-100 foot-deep ravine of Pine Run. Sharon was incorporated as a borough in 1841 (Durant 1877:13-14, 125). In 1850, 541 people were enumerated in the borough. The population was 900 in 1860, but climbed rapidly afterward, to 4,221 in 1870 (White 1909:81).

The Erie and Pittsburgh Canal, completed to Erie in 1844, provided the needed transportation outlet. The following year the first charcoal-fired blast furnace was constructed in Sharon, with six more built in 1846. Because of the poor quality of iron ore in Mercer County, several attempts were made to utilize ores from the southwestern shores of Lake Superior. By 1856, all the furnaces of Sharon were using the Lake Superior ores. Coal mined locally provided both coke for the furnaces and eventually power for the works. In addition, the rich agricultural hinterland was capable of feeding a large local population. Canals and narrow-gauge railroads transported raw materials and finished products.

Sharon expanded rapidly in the latter half of the nineteenth century. The first freight train arrived from New Castle, twelve miles to the south, in 1863. By 1864, regular freight and passenger service of the Erie and Pittsburgh Railroad, leased to the Pennsylvania Railroad, connected Sharon with Pittsburgh and Erie. The Atlantic and Great Western Railroad, a broad gauge track, was completed from Meadville to the Ohio state line near Sharon in 1863. The Atlantic and Great Western, leased to the Erie Railroad,⁶ was completed to Cleveland, Ohio, in 1869. Other railroads followed, providing Sharon with extensive transportation for additional industrial development. The canal was abandoned in 1871 (White 1909:70-76).

The iron and steel industry continued to develop. By 1906, the County ranked third in the state, behind Allegheny and Cambria Counties, in iron and steel production. Prosperity attracted large corporations to Sharon and the surrounding area. The Sharon Iron Works, begun by iron-industry entrepreneur Peter Shoenberger, continue to the present day as the Sharon Steel Company. Other works were purchased by the National Steel Company and American Steel Foundries. The latter two steel companies became part of U.S. Steel in 1901-1902. Other, smaller iron and steel works continued to operate in the Sharon area, manufacturing specialty steel, tools, and machinery (White 1909:355-359).

The residential and commercial areas of Sharon expanded as industry developed. The old, downtown portion of the town originally laid out by Budd became primarily commercial. Residences, including some built by the Sharon Iron Company (Durant 1877:129), began to be built on the slopes above the floodplain, and then on the plateau. The 1873 Hopkins' *Atlas* map of the town of Sharon shows street layout and residential development spreading outward from the central core of the city. From 4,221 persons in 1870,

⁶The Erie Railroad was the largest broad-gauge (six feet wide) railroad in the Northeast. The Atlantic and Great Western Railroad had been constructed to connect to the Erie, hence its broad gauge also (White 1909:72).

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Sharon grew to 8,916 in 1900. The town, confined to the floodplain in 1860, expanded by 1873. Although some development in east Sharon had occurred by 1873, the extensive development that now characterizes the area did not occur until the period 1890-1920, when the steel works expanded rapidly. The narrow-gauge Sharon and Greenfield Railroad, which ran beneath an earlier Oakland Avenue Viaduct was removed about 1920, as other sources of coal were opened that could be mined more cheaply.

Sharon's population continued to grow into the twentieth century. From a population of 8,916 in 1900, it rose to 15,270 in 1910, nearly doubling in ten years. The trend continued, and the population reached 21,747 in 1920. In addition, Farrell, originally called South Sharon, was first listed in 1910 as a polity, with a population of 10,190. The Sharon Steel Company works continued to expand in Farrell, and Farrell's population increased to 15,586 by 1920. The expansion of the Sharon and Farrell works was due in part to new methods of coal mining, some of which were pioneered in Mercer County. New, larger steam shovels, some originally designed for use on the Panama Canal, permitted the removal of large amounts of overburden to directly mine coal. The result, now called strip mining, enabled the coal of Mercer County, which often occurred in layers too thin to be profitably mined with tunnels and shafts, to be cheaply mined. The expansion of the Sharon-Farrell steel works ended with the recession of 1923.⁷

The steel industry in the Sharon area continued to operate throughout the Great Depression, but did not experience the ongoing expansion of previous years. When World War II came, the Sharon-Farrell mills ran at full capacity, and continued to do so until about 1955. The population enumeration of Sharon and Farrell reflected the relative prosperity. Sharon's population peaked in 1950 with 26,454 people, and Farrell's population was 13,644 the same year. Like many Pennsylvania steel towns, the population then declined as the steel industry suffered a nationwide collapse.

The steel industry in the United States declined in the period 1955-1982. Most steel works in the United States, including those of Sharon, had been built in the period 1890-1920. By 1955, these works were competing with foreign steel works that had been rebuilt following World War II. The newer foreign works utilized more modern technology, and produced steel cheaper than the aging United States plants could. By 1982, the steel industry in the United States had largely collapsed. The extensive works that had once lit the evening skies of Sharon began to be dismantled and removed.

Other industries did not replace the steel industry. Although light manufacturing and service industries have moved into Sharon, buildings still stand vacant. By 1990, population of Sharon had fallen to 17,493, below its 1920 numbers. The population of Farrell fell more precipitously, to 6,841 in 1990, the lowest numbers since its incorporation, and less than half its 1920 population. The Sharon-Farrell area received an economic boost with the

⁷The U.S. Census records for the years 1910-1990 were used, with additional information provided by local informants.

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completion of Interstate 80 in 1971, which provided nearby access to long-distance automobile and tractor-trailer transportation. This boost slowed the population decline, but did not reverse it.

Similar trends occurred throughout much of Pennsylvania. The foundations for the future town were laid by the early European-American settlers, following the destruction or expulsion of the Native Americans. In the first half of the nineteenth century, entrepreneurs built mills and roads. Canal transportation opened areas to wider markets. The railroads quickly followed, bringing raw materials for heavy industry. Technological innovation in the steel industry resulted in extensive works, which required a large population of laborers. The laborers and their families needed housing, some of which was built by the industries, but most of which was constructed by private entrepreneurs. The works later became antiquated, and the industry declined, only partly replaced by other industries. As the mills hired fewer laborers each year, people were less likely to invest in major renovations to their homes and businesses. Thus, a by-product of the economic decline was the preservation of much historic architecture in a relatively unaltered form.

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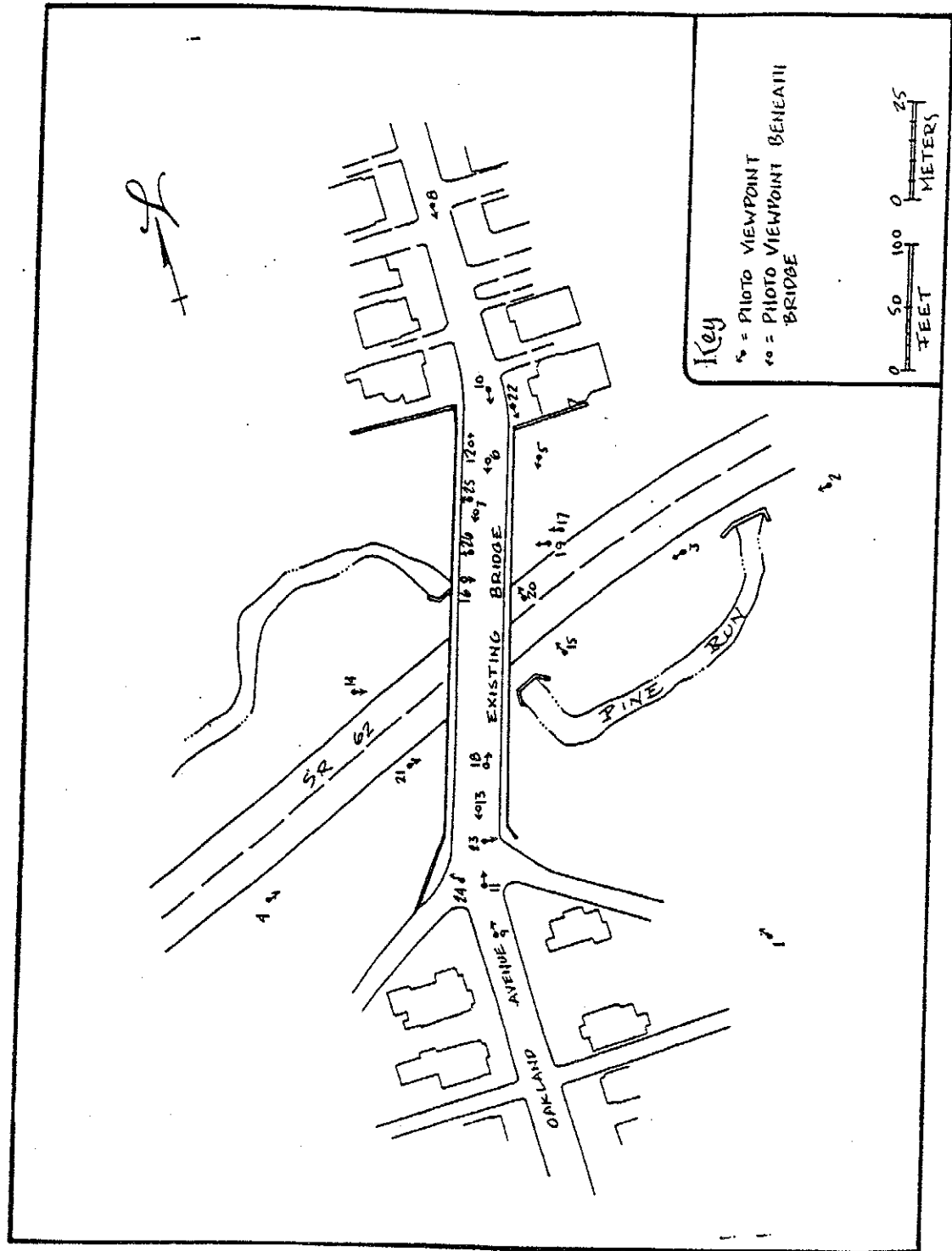
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Current Site Plan of the Oakland Avenue Bridge